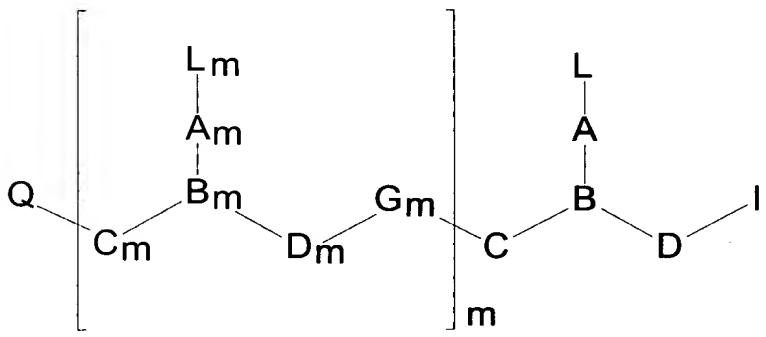
This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-52 (canceled)

53. (currently amended) A peptide nucleic acid ~~conjugate~~ of the formula:



wherein:

m is an integer from 1 to about 50;

L and L_m independently are naturally occurring nucleobases ~~$R^{12}(R^{13})_a$ wherein:~~

~~R^{12} is hydrogen, hydroxy, (C_1-C_4)alkanoyl, a naturally occurring nucleobase, a non-naturally occurring nucleobase, an aromatic moiety, a DNA intercalator, a nucleobase-binding group, a heterocyclic moiety, a reporter ligand, or a conjugate;~~

~~provided that at least one of R^{12} is a naturally occurring nucleobase, a non-naturally occurring nucleobase, or a nucleobase-binding group;~~

~~R^{13}, if present, is a conjugate;~~

~~provided at least one R^{12} and R^{13} is a conjugate; and~~

~~a is 0 or 1;~~

C and C_m ~~independently~~ are $(CR^6R^7)_y$; wherein:

R^6 and R^7 ~~independently~~ are hydrogen~~, a side chain of a naturally occurring alpha amino acid, (C_2-C_6) alkyl, aryl, aralkyl, heteroaryl, hydroxy, (C_1-C_6) alkoxy, (C_1-C_6) alkylthio, a conjugate, NR^3R^4, SR^5 or R^6 and R^7 taken together complete an alicyclic or heterocyclic system~~;

~~wherein R^5 is hydrogen, a conjugate, (C_1-C_6)alkyl, hydroxy-, alkoxy-, or alkylthio-substituted (C_1-C_6)alkyl; and~~

R^3 ~~and R^4 independently are~~ is hydrogen~~, a conjugate, (C_1-C_4)alkyl, hydroxy- or alkoxy- or alkylthio-substituted (C_1-C_4)alkyl, hydroxy, alkoxy, alkylthio or amino~~;

D and D_m ~~independently~~ are $(CR^6R^7)_z$;

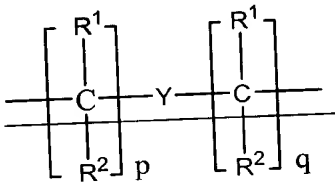
y is 1 and z is 2; ~~each of y and z is zero or an integer from 1 to 10, wherein the sum y + z is greater than 2 but not more than 10;~~

G_m is ~~independently~~ $-NR^3CO-$~~, $-NR^3CS-$, $-NR^3SO-$, or $-NR^3SO_2-$~~ in either orientation;

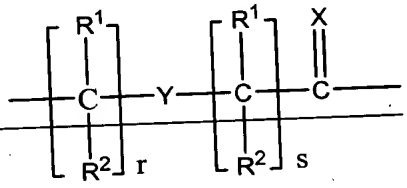
each pair of A-A_m and B-B_m are $>N-C(O)-CH_2-$ ~~selected such that:~~

~~(a) A or A_m is a group of formula (IIa), (IIb) or (IIc) and B or B_m is N or R^3N+; or~~

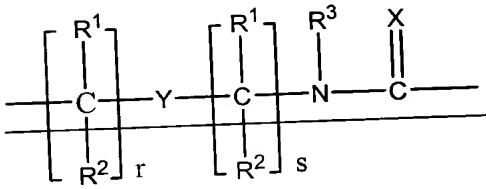
~~(b) A or A_m is a group of formula (IId) and B or B_m is CH;~~



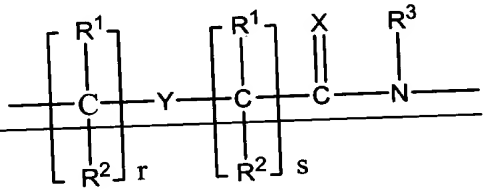
IIa



IIb



IIc



IId

~~where:~~

~~X is O, S, Se, NR^3, CH_2 or $C(CH_3)_2$;~~

~~Y is a single bond, O, S or NR^4;~~

~~each of p and q is zero or an integer from 1 to 5;~~

~~each of r and s is zero or an integer from 1 to 5;~~

~~R^1 and R^2 independently are hydrogen, (C_1-C_4)alkyl, hydroxy substituted (C_1-C_4)alkyl, alkoxy substituted (C_1-C_4)alkyl, alkylthio substituted (C_1-C_4)alkyl, hydroxy, alkoxy, alkylthio, amino, halogen or a conjugate;~~

I is $-NR^8R^9$ or $-NR^{10}C(O)R^{11}$; wherein:

R^8, R^9, R^{10} and R^{11} independently are hydrogen, alkyl, an amino protecting group, a reporter ligand, an intercalator, a chelator, a peptide, a protein, a carbohydrate, a lipid, a steroid, a nucleoside, a nucleotide, a nucleotide diphosphate, a nucleotide triphosphate, an oligonucleotide, an oligonucleoside, a soluble polymer, a non-soluble polymer ~~or a conjugate~~, a reporter enzyme, a reporter molecule, a terpene, a phospholipid, a cell receptor binding molecule, a water soluble vitamin, a lipid soluble vitamin, an RNA/DNA cleaving complex, a porphyrin, or a polymeric compound selected from polymeric amines, polymeric glycols and polyethers; and

Q is $-CO_2H$, $-CO_2R^8$, $-CO_2R^9$, $-CONR^8R^9$, ~~$-SO_3H$, $-SO_2NR^{10}R^{11}$ or an activated derivative of $-CO_2H$ or $-SO_3H$; and~~

~~wherein:~~

~~at least one of Q and I comprises a conjugate selected from a terpene, a cell receptor binding molecule, a water soluble vitamin, a lipid soluble vitamin, a porphyrin, or an alkylator; or~~

~~at least one of A, A_m, L, and L_m comprises a conjugate selected from a reporter enzyme, a reporter molecule, a steroid, a carbohydrate, a terpene, a peptide, a protein, a phospholipid, a cell receptor binding molecule, a water soluble vitamin, a lipid soluble vitamin, an RNA/DNA cleaving complex, a metal chelator, a porphyrin, or a polymeric compound selected from polymeric amines, polymeric glycols and polyethers;~~

~~wherein said conjugate optionally includes a linking moiety.~~

54-62 (canceled)

63. (new). The peptide nucleic acid of claim 53 wherein R^8, R^9, R^{10} and R^{11} independently are hydrogen, alkyl, a peptide, a protein, a carbohydrate, a nucleoside, a

nucleotide, a nucleotide diphosphate, a nucleotide triphosphate, an oligonucleotide, or an oligonucleoside.

64. (new). The peptide nucleic acid of claim 53 wherein R^8, R^9, R^{10} and R^{11} independently are a nucleoside, a nucleotide, an oligonucleotide, or an oligonucleoside.